REMARKS

Claims 1-3, 5-6 are all the claims pending in the application.

The Specification is objected to.

Claims 1-3 are rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the written description requirement.

Claims 1-3, 5 and 6 are rejected under 35 U.S.C. § 102(b) as being anticipated by Yamamoto et al. (JP 10-149210, hereinafter "Yamamoto").

The Applicants traverse the rejections and request reconsideration.

Specification

The Examiner has objected to the Specification for informalities. The Specification has been amended

Claim Rejections - 35 U.S.C. § 112

Rejections of Claims 1-3 are, first paragraph,

"[T]he 'essential goal' of the description of the invention requirement is to clearly convey the information that an applicant has invented the subject matter which is claimed." *In re Barker*, 559 F.2d 588, 592 n.4, (CCPA 1977). The Applicants respectfully submit that, in essence, the "written description" requirement requires that each and every element in the claims be adequately described in the Specification to show one of skill in the art that the inventor was in possession of the invention at the time the application was filed. *See* Manual Of Patent Examining Procedure ("MPEP") § 2163.02. Further, "all that is necessary to satisfy the description requirement is to show that one is 'in possession' of the invention." *Lockwood v.*

American Airlines, Inc., 107 F.3d 1565, 1572 (Fed. Cir. 1997) citing *Vas-Cath Inc. v. Mahurkar*, 935 F.2d 1555 (Fed. Cir. 199).

However, it is well settled that "[i]t is not necessary that the claimed subject matter **be described identically**, but the disclosure originally filed must convey to those skilled in the art that the applicant has invented the subject matter claimed." *In re Wilder*, 736 F.2d 1516, 1520 (Fed. Cir. 1984) (citation omitted). Indeed, "[i]n order to satisfy the written description requirement, the disclosure as originally filed **does not have to provide in haec verba support** for the claimed subject matter at issue." *Crown Operations International, Ltd. v. Solutia Inc.*, 289 F.3d 1367, 1376 (Fed. Cir. 2002); *See In re Werthheim*, 541 F.2d 257, 265 (CCPA 1976) ("Lack of literal support…is not enough…to support a rejection under § 112.").

The Examiner is requested to reconsider his position regarding the rejections based on section 112, further in view of the following explanation regarding the limitations of concern.

i) Parameter "N" in claims 1 and 2

In the office action, the examiner rejects the expression "N is equal to or greater than a value defined by subtracting an order of the command from an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator" as falling to comply with the written description requirement. Particularly, the examiner asserts that the above expression is not supported by the application as originally filed. The Applicants respectfully disagree.

For example, in paragraph [0014] of the laid-open publication of the present application, the relationship between the load position XL and the torque command Tref is given by Equation (5).

$$Tref = (XL \cdot s^2 + J2/K2 \cdot XL \cdot s^4) \cdot J1 + J2 \cdot XL \cdot s^2$$

The above Equation (5) can be rewritten as follows:

$$XL = \frac{Tref}{(J1 + J2) \cdot s^2 + (J1 \cdot J2 / K2) \cdot s^4}$$

As can be seen from the above equation, in the transfer function of this approximation model, an order of the denominator is 4^{th} order

Meanwhile, paragraph [0030] describes:

"In order to correspond to the case in which a command cannot be differentiated (for example, a step command), therefore, the filter order N is to be 4 or more." A skilled artisan would know that this description in paragraph [0014] means the following:

In case of:

An order of denominator of a transfer function = 4; and

An order of a command = 0 (Note: In case the command is indifferentiable like a step command, the order of the command is 0),

the order N of the filter is calculated as follows:

N = (The order of denominator of the transfer function = 4) - (the minimum value of the order of the command = 0) = 4.

In other words, N should be 4 or more,

In view of the above, a skilled artisan would be able to understand the expression "N is equal to or greater than a value defined by subtracting an order of the command from an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator," based in the disclosure as originally filed.

ii) Parameter "L, N" in claim 3

In the office action, the examiner also rejects the expression "L is an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator, and N is equal to or greater than a value defined by subtracting an order of the command from L" as being not supported by the application as originally filed. Applicants respectfully disagree.

For example, paragraphs [0052]-[0053] of the laid-open publication describe:

"The value of the variable L is set to correspond to the order of a model for approximating a control object. For example, in the case in which an optimum command is to be created for a control object having a 2-inertia system, it is sufficient that a command is obtained up to a 4-rank differential value as described above. This is equivalent to the fact that the order of the control object having the 2-inertia system is four. More specifically, the value of L is four in this case."

Furthermore, paragraphs [0055]-[0056] of -the laid-open publication describe:

"For example, in the case in which a command given previously is 2-rank differentiable, it is sufficient that the filter order N is two or more. In this case, accordingly, N=2 and L=4 can be implemented."

From these descriptions, a skilled artisan will be able to understand that L is an order (4^{th}-order in this embodiment) of denominator of a transfer function, and N is equal to or greater than a value defined by subtracting an order (2^{nd}-order, since the command is 2-order differentiable in this embodiment) of the command from L (4^{th}-order). That is N should be 2 or more.

In view of the above, a skilled artisan will be able to understand the expression "L is an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator, and N is equal to or greater than a value defined by subtracting an order of the command from L" based on the disclosure originally filed.

Claim Rejections - 35 U.S.C. § 102

Rejection of Claims 1-3, 5 and 6 as being anticipated by Yamamoto.

1) Claim 1

The Applicants respectfully submit that Yamamoto does not disclose the present invention as recited in claim 1.

i) N-order filter processing section

In the disclosure of Yamamoto, coefficients a_0 to a_5 are calculated based on control gains (Kp etc.) and mechanical parameters (Jm, Ke, J1 etc). That is, since the coefficients a_0 to a_5 are varied depending on the change in the control gains, there is a problem in that the calculation amount is increased.

On the other hand, in the present invention, it is advantageous that the calculation amount is reduced since control gains (Kp etc.) or mechanical parameters (Jm, Ke, Jl etc.) are not

required at all in the N-order filter processing (see e.g., paragraphs [0074] and [0075] of the laid-open publication), The claimed N-order filter is used only to make an input signal dull and differentiable.

ii) Arithmetic unit

As described above, in the disclosure of Yamamoto, coefficients a_0 to a_5 are calculated based on control gains (Kp etc.) and mechanical parameters (Jm, Kc, J1 etc). That is, since the coefficients a_0 to a_5 are varied depending on the change in the control gains, there is a problem in that the calculation amount is increased.

On the other hand, in the present invention, for example, as can be seen from Equations (3) to (5), no control gains (Kp etc.) are included in the value calculated by the arithmetic unit. Rather, only mechanical parameters (J'm, Kc, J1 etc) are included in the calculated value.

The above-mentioned difference between Yamamoto and the present invention is clear from the comparison between Equation 2 in Yamamoto and Equations (3) to (5) in the present specification.

iii) "N is equal to or greater than, a value defined by subtracting an order of the command from an order of denominator of a transfer function of an approximation model that represents the controlled object with Laplace operator"

The inverse transfer function disclosed in Yamamoto is, as is clear from Equation 2, is directed to an entire system including a control system and a controlled object. On the other hand, in the present invention, as recited in claim 1, the transfer function is directed to only a

controlled object. That is, the transfer function is not directed to a control system. Thus, in the present invention, it is not necessary to change gains with the change in control gains, and thus the calculation amount is reduced.

2) Claim 2

Claim 2 requires an M-order filter. The position control part 2 and the speed control part 3 of Yamamoto are not a primary filter, that is, they do not corresponding to the claimed M-order filter.

3) Claim 3

As described above, the inverse transfer function disclosed in Yamamoto is, as is clear from Equation 2, is directed to an entire system including a control system and a controlled. object. On the other hand, in the present invention, as recited in claim 3, the transfer function is directed to only a controlled object. That is, the transfer function is not directed to a control system.

In addition, the above discussed arguments regarding claim 1 are equally valid for claims 2 and 3.

Claims 5-6 are allowable at least because they depend on claims 1-3.

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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Date: November 9, 2010